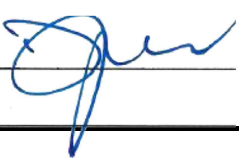
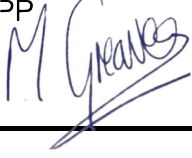


TECHNICAL DIRECTORATE

Report on Review of Farringdon Station Lighting Single Points of Failure

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1 Introduction

The installed lighting arrangements at the Stations, Shafts and Portals are required to be safe, fit for purpose, consistent and compliant right across the Central Operating Section, in particular with regard to Single Points of Failure (SPoF). A SPoF is defined as where the failure of a single luminaire or a lighting circuit would result in the room or area being plunged into darkness. CEG deemed it necessary to investigate if there were any such SPoF arrangements in the As-Built lighting installations and whether there were risks of any significance to passengers or staff resulting from these.

To determine the current status of the lighting installations and their alignment with CRL requirements, CEG produced a set of SPoF criteria, derived from the relevant Standards, and set up a series of Review Workshops with each of the Stations and Shafts to carry out a detailed risk-based review of the current As-Built arrangements.

2 Purpose

The purpose of this Review Workshop was for CEG and the Farringdon Station (FAR) CRL Field Engineers to carry out a thorough page-turn of the FAR set of As-Built lighting drawings to identify and assess any potential SPoF issues and to decide what, if any, action needed to be taken using a risk-based approach.

3 Scope

The review covered the Normal and Emergency Lighting Systems in all areas of the FAR Crossrail Station including Public areas and Back of House areas, East and West Boxes, Street level down to Platform level, Urban Realm, OSD, LU and Thameslink interface areas.

The four SPoF criteria that the lighting systems were reviewed against are as follows:

1. A single luminaire in a room
2. A single lighting circuit serving a room and the lobby or corridor outside
3. A single lighting circuit serving a staircase or a main escape route corridor
4. Fire survivability of the Emergency luminaire plug and socket connector

Note that preliminary discussions, held prior to this series of reviews, with the CEG Fire Team and with LUCT and RfL Engineers confirmed that the criteria 4 "Fire survivability of connectors" was deemed such low risk that, subject to the other three criteria being satisfied, that no remedial action on site of these connectors was necessary, refer to item 2. In the Risk Assessment in Appendix A.

4 Terms & Definitions

ALARP : As Low As Reasonably Practicable

BoH : Back of House areas

FAR : Farringdon Crossrail Station

IMs : Infrastructure Managers (LU and RfL)

SPoF : Single Points of Failure in the lighting system

5 Responsibilities

This review was carried out by the following CRL Engineers.

Gareth Chapman : C435 FAR Lead Field Engineer Assurance Engineer - Electrical

Mike Twiddy : C435 FAR Supervisor's Representative

Paul Kerrigan : CEG MEP Team Electrical Engineer – Lighting & UPS

Derek Tyner : CEG Lead MEP Engineer

Note that this review did not include the IM Engineers as at this point in the process the focus was on investigation, review and assessment of the installed arrangements. In accordance with the recently issued RACI, the IMs were informed of this process and will be fully consulted with the results, as set out in this report.

6 Procedure for the SPoF Lighting Review and Risk Assessment

6.1 Identification of potential SPoF in the installed arrangements

- 6.1.1 The FAR site team carried out a detailed review of their As-Built lighting drawings. Any areas that were found to be covered by the three SPoF criteria above were highlighted and collated into a slide pack for further review and assessment with CEG during the workshop.

6.2 Review and Risk Assessment of the identified SPoF arrangements

- 6.2.1 The risk assessment format used for this review was the Crossrail 5 by 5, Probability Versus Impact Matrix, refer to Appendix A for the completed risk assessment matrix.
- 6.2.2 There were 113 No. potential SPoF issues identified at FAR. It was determined in the review that 84 No. of these potential issues were compliant with Standards and so did not require any further scrutiny. Most of these 84 No. fall into the category of criteria 4, Fire Survivability of the luminaire connectors, which both LU and RFL had confirmed was not a concern for the IMs.
- 6.2.3 The remaining 29 No. potential SPoF issues identified were Risk Assessed using the 5 by 5 risk matrix. Of these 29, only 3 No. Rooms / Areas were found to require some remedial works on site to be deemed acceptable. The site works required are either the install of an additional luminaire, or the install of an additional lighting circuit, into that Room or Area.

7 Notes

The FAR Station review has confirmed that only 3 No. Rooms or Areas will require remedial works on site to make the lighting installation compliant with the SPoF criteria, with the CRL Standards Baseline and Specifications and to be accepted that any residual risk level is ALARP.

CEG are satisfied that on completion of these remedial works, as identified in the attached Risk Assessment in Appendix A, the lighting installation will be safe, fit for purpose and compliant with CRL requirements.

8 Reference Documents

Ref:	Document Title	Document Number:
1.	LUL Standard "Lighting of London Underground Assets"	1-066 Issue No. A2, dated February 2008
2.	BS 5266-1 : 2005 Emergency Lighting	
3.	M&W Specification JV21 General Lighting	CRL1-XRL-M-RSP-CR001-50040, Rev 1.0
4.	M&W Specification JV40 Emergency Lighting	CRL1-XRL-M-RSP-CR001-50044, Rev1.0

9 Standard Forms / Templates

Ref:	Document Title	Document Number:
A.		
B.		

10 Appendices

Appendix A – FAR SPoF Risk Assessment Matrix

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